

Title (en)

Programmable voltage controlled ring oscillator.

Title (de)

Spannungsgesteuerter programmierbarer Ringoszillator.

Title (fr)

Oscillateur en anneau programmable commandé en tension.

Publication

**EP 0427442 A2 19910515 (EN)**

Application

**EP 90311891 A 19901030**

Priority

US 43326089 A 19891108

Abstract (en)

Each section (e.g., 102) of the ring oscillator consists of three two-input NOR gates; one in the feedforward path (108), one in the feedback path (112), and one in the crossover path (110). The center frequency of the oscillator is controlled by enabling and disabling the appropriate gates, such that a single closed loop path is formed. The gates in the feedforward and crossover paths are directly enabled or disabled (to disable, either input is held high) from a control circuit (Fig. 2). The gates in the feedback path, however, are indirectly enabled and disabled. To enable a particular feedback path gate (e.g., 118), either the corresponding crossover gate (116) is disabled, or the corresponding feedforward gate is disabled (114) and the crossover gate (122) in the following section is enabled. The later causes the feedback gate (124) in the following section to be disabled, thereby removing the remaining sections (106) of the oscillator from the closed loop path. The NOR gates are implemented as a differential amplifier (Fig. 5) having two transistors (610 and 612) in the input leg and one transistor (616) with its base connected to a regulated voltage ( $V_r$ ) in the opposite leg. The output of the NOR gate is taken from the collectors of the input transistors. The propagation delay of the oscillator signal through the gate is minimal because, to switch the output state of the gate, only the state of one of the input transistors (610 or 612) must be changed. The short propagation delay through the gate permits high frequency operation, as well as the ability to program small incremental steps in the center frequency of the oscillator. <IMAGE>

IPC 1-7

**H03K 3/03**

IPC 8 full level

**H03K 3/03** (2006.01); **H03K 3/282** (2006.01)

CPC (source: EP US)

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Cited by

FR2700429A1; US5528200A; EP0661710A3; US6137345A

Designated contracting state (EPC)

DE FR GB IT

DOCDB simple family (publication)

**US 4978927 A 19901218**; BR 9005496 A 19910917; DE 69022679 D1 19951102; DE 69022679 T2 19960502; EP 0427442 A2 19910515; EP 0427442 A3 19920304; EP 0427442 B1 19950927; JP H03162118 A 19910712; JP H0697734 B2 19941130

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